



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,379	03/23/2004	Jang-Kun Song	8071-128T (OPP 030152US)	1832
7590 F. Chau & Associates, LLC 130 Woodbury Road Woodbury, NY 11797			EXAMINER NGUYEN, THANH NHAN P	
			ART UNIT 2871	PAPER NUMBER
			MAIL DATE 04/17/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/806,379	Applicant(s) SONG, JANG-KUN	
	Examiner THANH-NHAN P. NGUYEN	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 42-61 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 51-61 is/are allowed.
- 6) ☒ Claim(s) 42-45 and 47-49 is/are rejected.
- 7) ☒ Claim(s) 46 and 50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/27/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation (in claim 46) “wherein the distance between the major edges of each tilt region is in a range between about 10 microns and about 30 microns” must be shown (*clearly marked in the drawing(s) – emphasis added*) or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 46 and 50 are objected to because of the following informalities:

Claim 46:

It is unclear about limitation, "a distance between the major edges of each tilt region".

Claim 50:

It is also unclear about limitation, "one of the terminal electrodes includes an expansion having a quadrilateral shape that is rotated by about 45 degrees with respect to the lengthwise direction of the third signal line."

It seems the applicant meant to say "wherein at least a side of the quadrilateral shape having an angle with respect to the lengthwise direction of the third signal line about 45 degrees."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 42, 43 and 47 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishikawa et al (US 7,119,870).

Nishikawa et al disclose a liquid crystal display comprising:

Claim 42:

- a first substrate (10)
- a plurality of first signal lines (55) formed on the first substrate, extending in a first direction, and separated from each other by a predetermined interval
- a plurality of second lines (80) formed on the first substrate, intersecting the first signal lines, and including a plurality of curved portions
- a plurality of pixel electrodes (19) located substantially in areas defined by the first and the second signal lines
- a plurality of thin film transistors connected to the first and the second signal lines and the pixel electrodes
- a plurality of third signal lines (52) formed on the first substrate, extending substantially in the first direction, and overlapping the pixel electrodes to form storage capacitors, wherein the thin film transistors include terminal electrodes connected to the pixel electrodes
- a second substrate (30) facing the first substrate
- a common electrode (34) formed on the second substrate
- a region partitioning member (91) formed on at least one of the first and the second substrates and partitioning into a plurality of tilt regions by the region partitioning member, each tilt region including a pair of major edges parallel to the curved portions of the second signal lines

- a liquid crystal layer (21) disposed between the first substrate and the second substrate, wherein the liquid crystal layer has negative dielectric anisotropy and is subject to vertical alignment

Claim 43:

- a pair of crossed polarizers (41, 42) are provided on outer surfaces of the first and the second substrates, respectively, and the first and the second polarizers are aligned so that one of the transmissive axes of the polarizers is parallel to the first signal lines

Claim 47:

- wherein the tilt regions are classified into four domains based on tilt directions of liquid crystal molecules included therein upon application of an electric field

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 44, 45, 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishikawa et al.

Claims 44 and 45:

Even though Nishikawa et al do not explicitly disclose the region partitioning member comprises a plurality of cutouts formed in the common electrode; wherein the cutouts have a width ranging about 9 microns to about 12 microns, it would have been

Art Unit: 2871

obvious to one of ordinary skill in the art to have the cutouts formed in the electrodes (pixel electrodes or common electrodes - emphasis added) or to have protrusions formed on the electrodes (pixel electrodes or common electrodes - emphasis added) for the benefit of controlling the alignment of liquid crystal molecules and forming multi-domain to improve viewing angle in liquid crystal display device. Further, it would have been also obvious to have the cutouts' width ranging about 9 microns to about 12 microns because if it is less than 9 microns, it might not function well as the alignment controlling; if it is more than 12 microns, it might reduce the aperture ratio in the electrodes.

Therefore, the limitations do not patentably distinguish the invention.

Claim 49:

Nishikawa et al disclose the region partitioning member (91) comprises a protrusion formed on the common electrode (34). However, Nishikawa et al do not explicitly disclose the protrusion having a width ranging about 5 microns to about 10 microns.

Similarly, it would have been obvious to one of ordinary skill in the art to have the protrusion's width ranging about 5 microns to about 10 microns because if it is less than 5 microns, it might not function well as the alignment controlling; if it is more than 10 microns, it might reduce the aperture ratio in the electrodes.

Therefore, it does not patentably distinguish the invention.

Claim 48:

Even though Nishikawa et al do not explicitly disclose the number of the tilt region is four if a planar area of the pixel region is smaller than about 100x300 square microns, and the number of the tilt regions in a pixel region is four or eight if a planar area of the pixel region is equal to or larger than about 100x300 square microns, it would have been obvious to one of ordinary skill in the art to have the number of the tilt regions in the pixel region based on the area of the pixel region at least for the benefit of having the alignment controlling as desired to improve the viewing angle. Thus, it does not patentably distinguish the invention.

Allowable Subject Matter

Claims 51-61 are allowed.

Reason for allowance: There is no prior art of record that teaches or suggests a liquid crystal display comprising a relationship of various elements as claimed with the specific allowable subject matter cited in the following claim:

Claim 51:

- a data line formed on the semiconductor layer at least in part and including a curved portion and an intermediated portion crossing the gate line substantially at a right angle, at least one of the curved portions and the intermediate portions having a source electrode, wherein the intermediate portion extends from the curved portion at an angle with respect to the curved portion
- a pixel electrode formed on the first passivation layer, connected to the drain electrode, and having an edge extending substantially parallel to the curved portion of the data line

- a storage electrode line formed on the substrate, extending substantially parallel to the gate line, and including a storage electrode, having an increased width with respect to a width of the storage electrode line, wherein the storage electrode has a quadrilateral shape and an edge of the storage electrode is inclined by an angle of about 45 degrees with respect to a lengthwise direction of the storage electrode line
- a region partitioning member formed on at least one of the first and the second substrates and partitioning into a plurality of tilt regions by the region partitioning member

Claims 52-61 are allowed since they depend of allowed claim 51.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P. Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

-- April 14, 2008
(Nancy) Thanh-Nhan P. Nguyen
Examiner
Art Unit 2871

/David Nelms/

Supervisory Patent Examiner, Art Unit 2871